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Claims

[c1] An apparatus for breaking frictional bonds between contiguous items arranged in a substantially vertical stack in a hopper that is emptied from the bottom, comprising:
a floor plate for supporting said items in said hopper, said floor plate being disposed in a substantially horizontal plane and said floor plate having a leading edge and a trailing edge;
a base plate that overlies said floor plate and that is secured to said floor plate for conjoint movement therewith, said base plate having a leading edge and a trailing edge;
at least one jostling member secured to said base plate;
said at least one jostling member having a part adapted to tap against a trailing edge of said items;
oscillating means secured to said floor plate to cause said floor plate and hence said base plate and said at least one jostling member to oscillate in said substantially horizontal plane;
said at least one jostling member adapted to tap respective trailing ends of said items in said hopper so that said tapping prevents said items from becoming stuck in said hopper, thereby maintaining a constant pressure on

said floor plate and so that said tapping breaks frictional bonds between said contiguous items.

[c2] The apparatus of claim 1, further comprising:
a first conveyor means that delivers said items to said hopper along a first path of travel;
a second conveyor means that carries items from said hopper along a second path of travel disposed substantially ninety degrees (90°) to said first path of travel;
said leading edge and said trailing edge of said floor plate being substantially parallel to said first path of travel and substantially transverse to said second path of travel;
said oscillating means oscillating said floor plate in a direction substantially transverse to said first path of travel and substantially parallel to said second path of travel.

[c3] The apparatus of claim 2, further comprising:
an adjustably mounted barrier means that extends into said hopper in a direction transverse to said first path of travel so that said hopper may accommodate items of differing lengths.

[c4] The apparatus of claim 2, further comprising:
an elongate rod disposed in substantially parallel relation to said first path of travel;
a mounting block slideably mounted along the extent of

said elongate rod;

a rigid barrier arm mounted to said block and extending from said block in substantially parallel relation to said second path of travel;

locking means for locking said mounting block at any preselected position along said extent of said elongate rod;

whereby said rigid barrier arm is moved a preselected distance toward said first conveyor means to accommodate items of relatively short extent; and

whereby said rigid barrier arm is moved a preselected distance away from said first conveyor means to accommodate items of relatively long extent.

[c5] The apparatus of claim 2, further comprising width adjusting means so that said hopper accommodates items of differing widths entering said hopper from said first conveyor means.

[c6] The apparatus of claim 5, said width adjusting means comprising:

an elongate slot formed in said floor plate, said elongate slot being in substantially parallel relation to said second path of travel;

said at least one jostling member being mountable at any preselected location along the length of said elongate slot;

whereby said at least one jostling member is moved a preselected distance toward said second conveyor means to accommodate items of relatively narrow width; and whereby said at least one jostling member is moved a preselected distance away from said second conveyor means to accommodate items of relatively wide width.

[c7] The apparatus of claim 1, wherein said oscillating means further comprises:

a biasing means housing fixedly secured to said floor plate, said biasing means housing having a closed end and an open end;

a biasing means disposed within said biasing means housing;

a cam follower housing fixedly secured to said floor plate;

said biasing means disposed in abutting relation to said cam follower housing and urging said cam follower housing away from said biasing means housing;

a cam follower rotatably mounted in said cam follower housing;

a rotatably mounted drive shaft;

a cam eccentrically mounted to said drive shaft for con-joint rotation therewith;

said biasing means urging said cam follower into abut-ting relation to said cam;

whereby rotation of said cam effects oscillation of said cam follower housing and hence of said floor plate, said base plate and said at least one jostling member.

[c8] The apparatus of claim 1, said oscillating means further comprising:
said jostling member being provided in the form of an angle member;
said angle member having a horizontal part secured to said base plate; and
said angle member having an angled part that projects upwardly from said leading end of said horizontal part at a predetermined angle.

[c9] The apparatus of claim 8, said oscillating means further comprising:
said predetermined angle being an acute angle.

[c10] The apparatus of claim 8, said oscillating means further comprising:
said predetermined angle being a right angle.

[c11] The apparatus of claim 7, said oscillating means further comprising:
said jostling member being provided in the form of a wheel;
said wheel having an axle disposed substantially copla-

nar with said floor plate.